REMARKS

In the Office Action, the Examiner objected to claims 32-33, 35, 41-42 and 44 for

informalities. The Examiner also rejected claims 27-32, 36-41 under the judicially created doctrine

of obviousness-type double patenting as being unpatentable over claims 1, 17, 33 and 48 of

United States Patent 6,651,233 issued to Teig, et al. ("Teig"). Furthermore, the Examiner

provisionally rejected claims 27-44 under the judicially created doctrine of obviousness-type

double patenting as being unpatentable over claims 27-46 of co-pending United States

Application 10/047,978 and over claims 27-38 of co-pending Application 10/046,864. Moreover,

the Examiner rejected claims 27-32 and 36-41 under 35 U.S.C. §102(e) as being anticipated by

United States Patent 5,218,551 issued to Agrawal, et al. ("Agrawal"). The Examiner also rejected

claims 27-32 and 36-41 under 35 U.S.C. §102(e) as being anticipated by United States Patent

5,784,289 issued to Wang ("Wang"). The Examiner also objected to claims 33-35 and 42-44 as

being dependent upon a rejected base claim.

In this Amendment, Applicants have amended claims 27, 32-33, 35-36, 41-42 and 44.

Applicants have not added or canceled any claim. Accordingly, claims 27-44 will be pending in

the application after entry of this Amendment.

I. Objection to Claims 32-33, 35, 41-42 and 44

In the Office Action, the Examiner objected to claims 32-33, 35, 41-42 and 44 for lack of

proper antecedent basis. Applicants have amended claims 32-33, 35, 41-42 and 44. Applicants

respectfully submit that claims 32-33, 35, 41-42 and 44 do not lack proper antecedent basis.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal

of the objection to claims 32-33, 35, 41-42 and 44.

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II. Rejection of Claims 27-44 Under Judicially Created Doctrine of Obviousness-Type

Double Patenting

In the Office Action, the Examiner also rejected claims 27-32, 36-41 under the judicially

created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 17,

33 and 48 of United States Patent 6,651,233 issued to Teig, et al. ("Teig"). Furthermore, the

Examiner provisionally rejected claims 27-44 under the judicially created doctrine of obviousness-

type double patenting as being unpatentable over claims 27-46 of co-pending United States

Application 10/047,978 and over claims 27-38 of co-pending Application 10/046,864.

Applicants have concurrently submitted a Terminal Disclaimer in compliance with 37

CFR 1.321(c) to overcome the above actual and provisional rejection based on the non-statutory

double patenting ground. In view of the foregoing, Applicants respectfully request

reconsideration and withdrawal of the rejection to claims 27-44.

III. Rejection of Claims 27-32 Under §102(e)

In the Office Action, the Examiner rejected claims 27-32 under §102(e) as being

anticipated by Agrawal and/or Wang. Claims 28-32 are dependent directly or indirectly on claim

27. Claim 27 recites a method of routing a several nets in a region of a design layout, each net

having a set of pins in the region. The method partitions the region into several sub-regions,

where several edges exist between the sub-regions. For each combination of a particular edge and

a particular net, the method identifies an edge-intersect cost based on the number of potential

routes for the particular net that intersect the particular edge, where (1) a potential route for a

particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2)

at least one particular net includes at least two potential routes. The method selects routes for

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nets based on the computed edge-intersect costs.

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Applicants respectfully submit that neither Agrawal nor Wang discloses, teach, or even

suggests such a method. Agrawal describes a placement method that places IC components in an

IC layout by partitioning the IC layout into regions. See Agrawal, column 3, lines 31-37.

Agrawal's placement method uses a cost parameter that is based on probability calculations to

place IC components in the IC layout. See Agrawal, column 14, lines 1-8 and column 15, line 25-

column 16, line 18. Furthermore, Agrawal's probability calculations are used to determine

whether the placement is unroutable. See Agrawal, column 16, lines 17-22. Agrawal does not

describe using probability calculations to select routes for nets based on a computed edge-

intersect cost. Therefore, Agrawal does not disclose, teach, or even suggest the method of claim

27 that identifies an edge-intersect cost based on the number of potential routes and selecting

routes for nets based on the computed edge-intersect costs.

Wang describes a placement method that places IC components in an IC layout by

estimating a density of a bounding box. Wang's placement method uses a probable density

calculation to either construct a congestion map and/or predict if a placement is unroutable. See

Wang, column 7, lines 1-7. Wang does not describe using probability calculations to select routes

for nets based on a computed edge-intersect cost. Therefore, Wang does not disclose, teach, or

even suggest the method of claim 27 that identifies an edge-intersect cost based on the number of

potential routes and selecting routes for nets based on the computed edge-intersect costs.

Furthermore, Applicants respectfully submit that the cited references does not disclose,

teach, or even suggest a method that identifies an edge-intersect cost based on the number of

potential routes for the particular net that intersect the particular edge, where (1) a potential

route for a particular net traverses the set of sub-regions that contain the particular net's set of

pins, and (2) at least one particular net includes at least two potential routes.

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render claim 27 unpatentable. As Claims 28-32 are dependent on claim 27, Applicants

respectfully submit that claims 28-32 are patentable over Agrawal and/or Wang for at least the

reasons that were discussed above in relation to claim 27.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal

of the §102(e) rejection of claims 27-32.

IV. Rejection of Claims 36-41 Under §102(e)

In the Office Action, the Examiner rejected claims 36-41 under §102(e) as being

anticipated by Agrawal and/or Wang. Claims 37-41 are dependent directly or indirectly on claim

36. Claim 36 recites a method of routing several nets in a region of a design layout, each net

having a set of pins in the region. The method partitions the region into several sub-regions,

where several paths exist between the sub-regions. For each combination of a particular path and

a particular net, the method identifies a path-use cost based on the number of potential routes of

the particular net that use the particular path, where (1) a potential route for a particular net

traverses the set of sub-regions that contain the particular net's set of pins, and (2) where at least

one particular net includes at least two potential routes. The method selects routes for the nets

based on the computed path-use costs.

Applicants respectfully submit that neither Agrawal nor Wang discloses, teach, or even

suggests such a method. Agrawal describes a placement method that places IC components in an

IC layout by partitioning the IC layout into regions. See Agrawal, column 3, lines 31-37.

Agrawal's placement method uses a cost parameter that is based on probability calculations to

place IC components in the IC layout. See Agrawal, column 14, lines 1-8 and column 15, line 25-

column 16, line 18. Furthermore, Agrawal's probability calculations are used to determine

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whether the placement is unroutable. See Agrawal, column 16, lines 17-22. Agrawal does not

describe using probability calculations to select routes for nets based on a path-use cost.

Therefore, Agrawal does not disclose, teach, or even suggest the method of claim 36 that

identifies a path-use cost based on the number of potential routes and selecting routes for nets

based on the path-use costs.

Wang describes a placement method that places IC components in an IC layout by

estimating a density of a bounding box. Wang's placement method uses a probable density

calculation to either construct a congestion map and/or predict if a placement is unroutable. See

Wang, column 7, lines 1-7. Wang does not describe using probability calculations to select routes

for nets based on a computed path-use cost. Therefore, Wang does not disclose, teach, or even

suggest the method of claim 36 that identifies a path-use cost based on the number of potential

routes and selecting routes for nets based on the path-use costs.

Furthermore, Applicants respectfully submit that the cited references does not disclose,

teach, or even suggest a method that identifies a path-use cost based on the number of potential

routes of the particular net that use the particular path, where (1) a potential route for a

particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2)

at least one particular net includes at least two potential routes.

Accordingly, Applicants respectfully submit that neither Agrawal nor Wang do not

render claim 36 unpatentable. As Claims 37-41 are dependent on claim 36, Applicants

respectfully submit that claims 37-41 are patentable over Agrawal and/or Wang for at least the

reasons that were discussed above in relation to claim 36.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal

of the §102(e) rejection of claims 36-41.

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V. Allowable Claims 33-35 and 42-44

In the Office Action, the Examiner objected to claims 33-35 and 42-44 as being dependent upon a rejected base claim. The Examiner stated that claims 33-35 and 42-44 were otherwise allowable if rewritten (1) in independent form and (2) to overcome the above mentioned objections to informalities. Applicants respectfully thank the Examiner for the allowance. However, Applicants respectfully have not rewritten any of these claims in independent form since Applicants respectfully believes that the rejected independent claims 27 and 36 are patentable over the cited reference.

In view of the foregoing, Applicants respectfully request reconsideration of allowable dependent claims 33-35 and 42-44.

CONCLUSION

In view of the foregoing, it is submitted that all pending claims, namely claims 27-44, are in condition for allowance. Reconsideration of the rejections and objections is requested.

Allowance is earnestly solicited at the earliest possible date.

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Respectfully submitted

ER.

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